

## CLAIMS

What is claimed is:

5           1.       A method for forming an oxide-nitride-oxide structure in one chamber, the method comprising the steps of:

providing a substrate;

forming a first oxide layer on said substrate;

forming a first buffer layer on said first oxide layer;

10           forming a silicon nitride layer on said first buffer layer;

forming a second buffer layer on said silicon nitride layer;

and

forming a second oxide layer on said second buffer layer.

15           2.       The method according to claim 1, wherein said first oxide layer is formed by introducing silane gas and nitrogen oxide gas.

20           3.       The method according to claim 1, wherein said first buffer layer is silicon oxynitride ( $\text{SiON}$ ) layer.

4.       The method according to claim 3, wherein said first buffer layer is formed by introducing silane ( $\text{SiH}_4$ ), nitrogen oxide ( $\text{N}_2\text{O}$ ) and ammonia ( $\text{NH}_3$ ) gas.

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5. The method according to claim 1, wherein said silicon nitride layer is formed by introducing silane ( $\text{SiH}_4$ ) and ammonia ( $\text{NH}_3$ ) gas.

6. The method according to claim 1, wherein said second buffer layer is silicon oxynitride ( $\text{SiON}$ ) layer.

7. The method according to claim 6, wherein said second buffer layer is formed by introducing silane ( $\text{SiH}_4$ ), nitrogen oxide ( $\text{N}_2\text{O}$ ) and ammonia ( $\text{NH}_3$ ) gas.

8. The method according to claim 1, wherein said second oxide layer is formed by introducing silane ( $\text{SiH}_4$ ) gas and nitrogen oxide ( $\text{N}_2\text{O}$ ) gas.

9. The method according to claim 1, wherein said oxide-nitride-oxide structure is formed in one wafer.

10. A method for forming an oxide-nitride-oxide structure, the method comprising the steps of:

providing a substrate;

forming a first oxide layer on said substrate;

forming a first buffer layer on said first oxide layer;

forming a silicon nitride layer on said first buffer layer;  
forming a second buffer layer on said silicon nitride layer;  
and

forming a second oxide layer on said second buffer layer,  
5 wherein said above-mentioned layer is formed in one chamber and  
in one wafer.

11. The method according to claim 10, wherein said ONO  
structure is formed by low pressure chemical vapor deposition  
10 (LPCVD) method.

12. The method according to claim 10, wherein said first  
oxide layer is formed by introducing silane gas and nitrogen oxide  
gas.  
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13. The method according to claim 10, wherein said first  
buffer layer is silicon oxynitride (SiON) layer.

14. The method according to claim 13, wherein said first  
20 buffer layer is formed by introducing silane, nitrogen oxide and  
ammonia gas.

15. The method according to claim 10, wherein said  
silicon nitride layer is formed by introducing silane and ammonia

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gas.

16. The method according to claim 10, wherein said second buffer layer is silicon oxynitride (SiON) layer.

17. The method according to claim 16, wherein said second buffer layer is formed by introducing silane, nitrogen oxide and ammonia gas.

18. The method according to claim 10, wherein said second oxide layer is formed by introducing silane gas and nitrogen oxide gas.

19. A method for forming an oxide-nitride-oxide structure, the method comprising the steps of:

providing a substrate;

forming a first oxide layer on said substrate, wherein said first oxide layer is formed by introducing silane gas and nitrogen oxide gas;

forming a first silicon oxynitride layer on said first oxide layer, wherein said first buffer layer is formed by introducing by introducing silane, nitrogen oxide and ammonia gas;

forming a silicon nitride layer on said first buffer layer, wherein said silicon nitride layer is formed by introducing silane and

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ammonia gas;

forming a second silicon oxynitride layer on said silicon nitride layer, wherein said second buffer layer is formed by introducing silane, nitrogen oxide and ammonia gas; and

- 5 forming a second oxide layer on said second buffer layer, wherein said second oxide layer is formed by introducing silane gas and nitrogen oxide gas, and wherein said above-mentioned layer is formed in one chamber and in one wafer.

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